

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF RHODE ISLAND

EMHART INDUSTRIES, INC.,

Plaintiff/Counterclaim Defendant,

v.

NEW ENGLAND CONTAINER
COMPANY, INC., ET AL.,

Defendants/Counterclaim Plaintiffs.

C.A. No. 06-218 S

EMHART INDUSTRIES, INC.,

Plaintiff/Counterclaim Defendant,

v.

UNITED STATES DEPARTMENT OF
THE AIR FORCE, ET. AL.,

Defendants/Counterclaim, Crossclaim,
and Third-Party Plaintiffs,

v.

BLACK & DECKER, INC., ET AL.,

Third-Party Defendants.

C.A. No. 11-023 S

Consolidated

**UNITED STATES' MOTION TO EXCLUDE CERTAIN TESTIMONY
OF JEFFREY J. LOUREIRO**

Emhart Industries, Inc. and Black & Decker, Inc. (collectively, "Black & Decker") intend to call as an expert witness in the ongoing Phase II trial in this case Jeffrey J. Loureiro. Mr. Loureiro's testimony purportedly may start as early as today – October 4, 2016. Based upon the 300-plus page demonstrative that counsel for Black & Decker provided to the United States just

before midnight on October 3, it is clear that Mr. Loureiro intends to offer extensive testimony and opinions not disclosed in his expert report in this matter. Moreover, in his deposition in this case, Mr. Loureiro specifically denied having formed such opinions. Black & Decker's attempt to present this testimony is a clear violation of Rule 26(a)(2) of the Federal Rules of Civil Procedure ("FRCP").¹ Allowing Mr. Loureiro to offer these undisclosed opinions would be highly prejudicial to the United States, especially given the United States' inability to explore such opinions through discovery or to counter them effectively through rebuttal testimony.

ARGUMENT

In its Phase II Pretrial Memorandum, Black & Decker identified Jeffrey J. Loureiro as an expert witness it intends to call in the Phase II trial in this case. *See* Emhart Industries, Inc. and Black & Decker, Inc.'s Phase II Pretrial Memorandum, Appendix (Docket # 446). Pursuant to FRCP 26(a)(2), Mr. Loureiro submitted an expert report in this case dated October 30, 2013. *See* Expert Report of Jeffrey J. Loureiro, PE, LEP, dated October 30, 2013 (attached hereto as Exhibit 1). The United States deposed Mr. Loureiro on July 16, 2014 ("Loureiro Deposition").

During trial on October 3, 2016, counsel for Black & Decker indicated that they intend to call Mr. Loureiro as early as today. Shortly before midnight on October 3, counsel for Black & Decker gave to the United States 317 slides that Mr. Loureiro intends to use during his testimony regarding the cleanup plan that the Environmental Protection Agency ("EPA") selected for the Centredale Manor Superfund Site ("Site"). Such slides indicate that Mr. Loureiro's trial testimony will include "an implementation scenario," "a 2-dimensional graphical depiction of the implementation scenario," and "3-dimensional renderings for certain parts of the process." *See*,

¹ This situation is fundamentally different than the issues discussed in Court yesterday regarding Dr. Keenan's testimony. Dr. Keenan expressed some new information and opinions. Black & Decker has substantially transformed Mr. Loureiro's testimony such that he intends to offer extensive new analysis.

e.g., Exhibit 2. Most of the remaining slides consist of detailed plans, conceptual drawings, projected construction timeframes, and cost estimates.

FRCP 26(a)(2) governs the pretrial disclosure of expert testimony. It states that any witness intending to offer expert testimony must prepare a written report. Such a report must include “a complete statement of all opinions the witness will express and the basis and reasons for them,” “the facts or data considered by the witness in forming them,” and “any exhibits that will be used to summarize or support them.” An expert report, “*together with expert depositions*, is what allows the other side to prepare its own experts and effectively cross-examine at trial.” *Bartlett v. Mutual Pharmaceutical Co.*, 678 F.3d 30, 40 (1st Cir. 2012) (emphasis added), *rev’d on other grounds*, 133 S. Ct. 2466 (2013). “Recognizing the importance of expert testimony in modern trial practice, the Civil Rules provide for extensive pretrial disclosure of expert testimony. This sort of disclosure is consonant with the federal courts' desire to ‘make a trial less a game of blindman's buff and more a fair contest with the basic issues and facts disclosed to the fullest practical extent.’” *Thibeault v. Square D Co.*, 960 F.2d 239, 244 (1st Cir. 1992) (quoting *United States v. Procter & Gamble Co.*, 356 U.S. 677, 682 (1958)); *see also Vigilant Insurance v. East Greenwich Oil Co.*, 234 F.R.D. 20 (D.R.I. 2006) (imposing as a sanction for failure to comply with Rule 26(a)(2) expert disclosure requirements limits on the scope of expert testimony).

Virtually all of the information in the 300-plus slides provided to the United States on the eve of Mr. Loureiro’s planned testimony at trial constitutes new analysis and opinions never before disclosed in discovery in this case. Mr. Loureiro’s 45-page report consists only of a narrative description of his criticisms of EPA’s selected remedy for the Site. *See* Exhibit 1. His report contains none of the following:

- graphics of any kind, other than a figure from the Feasibility Study Report and a single “site plan” of the source area, only, showing “potential problem areas”;
- 2- or 3-dimensional renderings of any aspect of the selected remedy;
- any attempt to “phase” the construction components of the selected remedy;
- any timing estimates of any aspect of the selected remedy; and
- any cost estimates of any aspect of the selected remedy.

In short, Mr. Loureiro’s slides indicate his intent to transform a general, narrative critique of various aspects of EPA’s selected remedy that he alleged were problematic or unrealistic into what amounts to his vision of the remedial design of EPA’s remedy. Significantly, during discovery, the United States had no opportunity to question Mr. Loureiro regarding this alleged design and the assumptions upon which it is based because none of it ever was disclosed.

Not only did Black & Decker fail to disclose the information in Mr. Loureiro’s planned testimony in his expert report, Mr. Loureiro further confirmed the limits of his opinions during his deposition in this case. Counsel for the United States repeatedly asked Mr. Loureiro questions about the scope of his opinions and, more importantly, what analysis Mr. Loureiro had not performed, and Mr. Loureiro unambiguously testified that he had not prepared the type of information about which he apparently now plans to testify. The following are notable excerpts from Mr. Loureiro’s deposition regarding the limits of his opinions and underlying analysis:

- Loureiro Deposition, p. 8, ln 9-20:

Q Mr. Loureiro, you've been handed two exhibits that have been marked Exhibit 1 and Exhibit 2. I know that you also prepared two other reports in 2009 in connection with this matter, but with respect to the recent round of expert reports, are Exhibit 1 and Exhibit 2 the only two reports that you've prepared in connection with this case? ^[2]

² The second report referenced in the deposition was a short report concerning an issue related to the liability phase of this case.

A Yes.

Q Do those two reports contain all of the opinions you intend to offer in this case?

A Yes.

- Loureiro Deposition, p. 121, ln 11 – 23:

A Here the construction cost is going to be substantially different.

Q How much more?

A I don't know how much more.

Q You don't know how much more?

A No.

Q How can you offer an opinion that it will be more if you don't know how much more?

A I know it will be more. I don't have to know how much more. I know it will be substantially more.

Q Do you know about how much more?

A No, I don't.

- Loureiro Deposition, p. 122, ln 14 - 21:

Q Now, you just said that adjusting the grade and the drainage at this site would be substantially more expensive than adjusting grade and drainage at a landfill site.

A That's correct.

Q How much more expensive?

A How much more on this site than a landfill site. I don't have the number.

- Loureiro Deposition, p. 124, ln 3-11:

Q Aren't you just speculating that this would be substantially more expensive?

A No, I'm not speculating. I know it will be substantially more expensive based on my experience. Absolutely it will be more expensive. I'm not speculating.

Q But you can't give a figure?

A I would have to do a design and cost estimate. I haven't done that.

- Loureiro Deposition, p. 129, ln 2-12:

Q Do you think that addressing the grade problem at the Smith Street entrance would be a significant cost increase?

A Yes. I think all of those things collectively are a significant cost increase, yes.

Q I'm asking just about the Smith Street entrance.

A Yes, it would be significant.

Q Do you know how much?

A And you're going to ask me how much, and I don't know how much.

- Loureiro Deposition, p. 148, ln 19 – p. 149, ln 5:

Q At the bottom of page 19 you say, "EPA did not consider the costs associated with addressing the implementation problems described above." To make sure I understand here, are you referring to all of the problems collectively?

A Yes.

Q You say, "Which could not be cured without a significant additional expenditure of funds." Do you know how much that expenditure would be?

A No.

- Loureiro Deposition, p. 150, ln 9-23:

Q So then what's your basis for saying that the time required to complete the construction of the CDF is significantly underestimated?

A What's the scope of the construction for the CDF? I mean, if you don't know the location of it, you don't know -- do you have to excavate a huge amount of material to construct it? What are all the -- it's assumed to be something that's straightforward. Maybe it isn't straightforward, you don't know what it is. What if it's a site. I've got to excavate out 150,000 yards of materials to make room?

Q Do you know that that's the case?

A No.

- Loureiro Deposition, p. 151, ln 14-16:

Q But you don't know how much longer task two should be estimated to take?

A No, I don't know.

- Loureiro Deposition, p. 155, ln 11-21:

Q You say that the validation process would take three weeks unless expedited. How long would it take if it was expedited?

A It depends, in my experience anyway. It depends on, again, the capacity, the availability, the difficulty that they have with the data packages. You might be able to do it faster if you're paying an expedited turn and somebody is available to do it.

Q Do you have a time range?

A I don't, no.

- Loureiro Deposition, p. 167, ln 16 – p. 168, ln. 8:

Q And that's based on your assumption that EPA could not continue to work downstream while it's waiting for results from a higher upstream excavation; is that right?

A Yes, but I didn't say you couldn't. I said there were limitations on how much of that you could do the way the alternative is programmed.

Q Do you know how much time it would add to the project that's not accounted for in the ROD?

A I don't, but my opinion is it would be significant.

Q What do you mean by significant?

A Certainly months and maybe longer.

Q And how much extra costs in your opinion would it add to the project?

A I didn't do that. I don't know.

- Loureiro Deposition, p. 210, ln 25 – p. 211, ln 13:

Q And you would agree that if in fact only 10 percent needed to be incinerated, and 90 percent went to a RCRA landfill, it would be significantly less expensive than 120 million?

A I don't know. How much is the RCRA landfill?

Q It would be less than the \$880 per ton, right?

MR. PIROZZOLO: Objection.

A I don't know that either.

Q So you don't know how much it would cost?

A I don't know how much.

- Loureiro Deposition, p. 218, ln 2-23:

Q And it then goes on to say, This assumption is a reasonable one because, although deposition processes are episodic rather than continual as in dormant regions of the ponds when flood waters do enter the Oxbow, they normally contain large quantities of suspended particulates that get deposited there. Right?

A That's their opinion is that it's reasonable, that the assumption is reasonable.

Q Do you have any basis to disagree with that?

A No. I don't know whether it's reasonable or it isn't reasonable, but I agree with the idea that it's important, and what we go on to say in my comments is that if it's wrong and it's actually lower, then it has a significant impact on the remedy.

Q I understand that that's in your report.

A Right.

Q But you don't know whether or not it's wrong, right?

A I don't know whether or not it's wrong.

In short, during his deposition, Mr. Loureiro 1) repeatedly admitted that he did not have cost estimates for the elements of the selected remedy that he criticized, 2) was unable to say how much longer he believed certain phases of the remedy would take, and 3) acknowledged when asked that he did not “do a design and cost estimate” at least with respect to the work on the source area.

Black & Decker intends to have Mr. Loureiro present significant new testimony and opinions that never were disclosed in his expert report and that run counter to the testimony he gave in his deposition. Allowing Black & Decker to do so would be highly prejudicial to the United States. The United States has had no opportunity to explore these opinions through discovery, and the United States' comparable expert, Mr. John Gardner, will have insufficient time and information to address these opinions during rebuttal. As recognized by the First Circuit and this Court, this type of trial-by-ambush is exactly the thing Rule 26(a)(2) and the other Federal Rules of Civil Procedure are designed to prevent. In accordance with the *Vigilant Insurance* case, the proper remedy for this attempted abuse of the discovery rules by Black & Decker is to limit the scope of Mr. Loureiro's testimony to the opinions and analysis he disclosed in his expert report.

Respectfully submitted,

JOHN C. CRUDEN
Assistant Attorney General
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Dated: October 4, 2016

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Exhibit 1

EXPERT REPORT OF

JEFFREY J. LOUREIRO, PE, LEP

Centredale Manor Restoration Project Superfund Site

North Providence, Rhode Island

October 30 2013

In the Matter of:

EMHART INDUSTRIES, INC. V. NEW ENGLAND CONTAINER COMPANY ET AL.

AND EMHART V. U.S. AIR FORCE, ET AL.

UNITED STATES DISTRICT COURT FOR THE

DISTRICT OF RHODE ISLAND

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1. INTRODUCTION

1.1 Purpose of Report

I, Jeffrey J. Loureiro, provide this report as my expert opinion on behalf of Emhart Industries, Inc. (Emhart) concerning the United States Environmental Protection Agency's (EPA or Agency) remedy selection process culminating in the Agency's issuance of its Record of Decision for the Centredale Manor Restoration Project Superfund Site (Site) in North Providence, Rhode Island. The Record of Decision, dated September 2012, describes the evaluation and selection of cleanup measures intended to address the presence of hazardous substances at the Site. This report provides my opinions concerning EPA's selection of the cleanup measures to be implemented at the Site.

1.2 Qualifications

Presently, I serve as the Chief Executive Officer of Loureiro Engineering Associates (LEA). I have over 35 years of experience in the management, planning, design, permitting, construction and operation, maintenance and monitoring of a wide variety of projects in the fields of civil and environmental engineering. I have worked on projects throughout the United States as well as internationally for some of the world's largest corporations, a variety of federal, state, and local government entities, and hundreds of clients in the commercial, industrial, residential, and retail markets.

I have a Bachelors of Science Degree (Civil Engineering) from Northeastern University. I am a Professional Engineer (P.E.) and a Licensed Environmental Professional (L.E.P.)

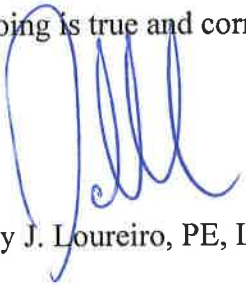
in the State of Connecticut. My L.E.P. license requires ongoing experience and continuing education to assure an understanding of industry practices and state-of-the-art technologies and techniques. I have completed hundreds of investigations, and developed and implemented remedial programs consistent with state and federal laws, regulations, and policies. I have also been retained as an expert witness on numerous occasions to render opinions regarding the conduct and efficacy of investigations and remedial activities in the context of applicable law and regulatory programs.

1.3 Compensation

My work as an expert in this matter, including my preparation of this report, is being compensated at the rate of \$168 per hour.

1.4 Signature

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.



Jeffrey J. Loureiro, PE, LEP

Executed on: 11.7.13

2. BACKGROUND

2.1 Sources of Information

My opinions are formed based on my long-term involvement with the Site. Since 1999, under EPA's supervision, LEA has conducted investigations and removal actions on behalf of Emhart and others at the Site, and also has evaluated the long-term efficacy of different remedial alternatives and completed assessments of soil, groundwater, and sediment, concerning potential risks posed to public health, safety, and the environment at the Site.

With specific reference to the opinions expressed herein, I draw on my prior work and knowledge involving the Site, my education and experience, and my review and analysis of the cleanup measures selected by EPA in the Record of Decision for the Site and underlying documentation related thereto designated by EPA in its administrative record for the Site.

I am very familiar with EPA's assessment of the Site. In particular, I participated in conducting a number of studies and response actions at the Site, on behalf of Emhart and others under EPA's supervision. I also assisted Emhart in preparing its comments on numerous EPA reports including, but not limited to, the Remedial Investigation (RI), the

Feasibility Study (FS), and the Proposed Remedial Action Plan (PRAP) for the Site.¹

2.2 Site History

The Site consists of two parcels located at 2072 and 2074 Smith Street (the Peninsula) in North Providence, Rhode Island, and downstream areas that EPA alleges have been impacted by activities conducted historically on the two parcels. Currently, there are two high-rise apartment buildings, known as Brook Village and Centredale Manor, on the parcels. On the eastern portion of the Peninsula is a drainage swale or “tail race” that empties into the Allendale Pond to the south. The Woonasquatucket River (the River) flows along the western portion of the Peninsula. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances, including volatile organic compounds (VOCs), dioxins, polychlorinated biphenyls (PCBs), metals, pesticides, and herbicides, have been identified in soil, sediment, and groundwater at the Site.

EPA alleges that historic drum reconditioning and chemical manufacturing operations on the Peninsula were the principal contributors to contamination on the Site. Between approximately 1952 and 1972, the New England Container Company (NECC) operated a steel drum reconditioning business on the Peninsula, which included an incinerator to burn residue and paint from inside 55-gallon open-top steel drums and a caustic bath

¹ See 40 CFR § 300.430.

process for cleaning the inside of 55-gallon closed-head drums. These NECC operations were situated near the tail race on the eastern side of the Peninsula.

2.3 Record of Decision

2.3.1 Description

The Record of Decision (ROD), dated September 2012, sets forth EPA's selected remedy at the Site. EPA has asserted that the selected remedy is a comprehensive approach that addresses all current and potential future risks caused by soil, sediment, groundwater and surface water contamination at the Site. [ROD Part 2: Decision Summary at Pg. 2]. For purposes of the ROD, EPA divided the Site into five "action areas": "Source Area Soil," "Source Area Groundwater," "Allendale Pond and Lyman Mill Pond Sediment," "Allendale Floodplain Soil," and "Lyman Mill Stream Sediment and Floodplain Soil" (including the Oxbow wetland).

The major components of this multi-faceted remedy are as follows:

1. Removal of potential buried material in the "Source Area" and off-site treatment and/or disposal; relocation of underground utilities into clean corridors; and conversion of existing ground surfaces (soil caps, parking lots, paved areas, and landscaped areas) into a RCRA Subtitle C cap.²

² 40 CFR Part 265. As described in the ROD Part 2: Decision Summary at Pg. 150, the RCRA cap would be designed to meet the requirements of the EPA Region 1 guidance for RCRA covers over unlined

2. Excavation of sediment and floodplain soil in the Allendale and Lyman Mill reaches of the Woonasquatucket River (River); containment of excavated material in one or more upland “Confined Disposal Facilities” (CDF)³ with sediments and soils that exceed certain regulatory standards (estimated by EPA to be 10 percent of that material) shipped off-site for disposal and/or treatment; placement of a thin-layer cover over remaining sediment in the River, if needed; and placement of a thin-layer cover over remaining sediments in the wetland known as the “Oxbow Area.”

3. Establishment, monitoring and enforcement of Institutional Controls (ICs)⁴ to permanently prohibit future excavation, restrict access to buried utilities, prevent the construction of buildings with pilings or basements or any other disturbance of the cap or other remedial components in the Source Area; permanently restrict the use of groundwater at the Source Area; permanently prevent excavation/construction or other activities that could damage the upland CDF; temporarily prevent excavation or other activities that could damage the thin-layer soil cover and Allendale Dam; temporarily restrict recreational access in the Oxbow wetland; and temporarily restrict fish consumption.

hazardous waste landfills; this RCRA cap would be designed to also meet requirements under the federal Toxic Substances Control Act (TSCA).

³ A CDF is a structure designed and constructed to contain contaminated sediment in a manner consistent with applicable regulations.

⁴ Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy.

4. Long-term inspections, maintenance and monitoring of the RCRA Subtitle C cap in the Source Area; installation of additional groundwater monitoring wells and groundwater monitoring at the edge of the Source Area cap; inspections, maintenance, and monitoring of the upland CDF and dams, including groundwater monitoring; monitoring of sediment, surface water and biota, and monitoring and maintenance to control invasive species.

2.3.2 Estimated Cost

Provided below is a chart of the estimated cost of the remedy as presented in the ROD at Table L-19. [ROD Part 2: Decision Summary at Pg. 203].

ALTERNATIVE	TOTAL CAPITAL COST	TOTAL O&M COST	TOTAL PRESENT WORTH COST
Source Area Soil (Alternative 4e)	\$21,200,000	\$500,000	\$21,700,000
Groundwater (Alternative 2e)		\$900,000	\$900,000
Allendale and Lyman Mill Sediment (Alternative 7a)	\$57,700,000	2,800,000	60,500,000
Allendale Floodplain Soil (Alternative 5a)	\$2,000,000	\$100,000	\$2,100,000
Lyman Mill Stream Sediment and Floodplain Soil (Including Oxbow) (Alternative 3a)	\$16,500,000	\$2,900,000	\$19,400,000
Total Remedy	\$97,400,000	\$7,200,000	\$104,600,000
National Historic Preservation Act compliance – estimated \$860,000 to \$1,000,000			

3. OPINIONS REGARDING EPA'S SELECTED REMEDY

3.1 Statement of Opinions

3.1.1 Source Area Soil

In the ROD, EPA identified "Alternative 4e" as the selected remedy for the "Source Area Soil." [ROD Part 2: Decision Summary at Pg. 134]. This alternative includes "excavation and off-site treatment of buried waste material; converting all existing caps, landscaped areas, and paved surfaces to a RCRA Subtitle "C" hazardous waste cap to cover remaining contamination exceeding cleanup levels; long-term monitoring; O&M and Institutional Controls (ICs) for the RCRA caps; wetland mitigation; and replacement of flood storage capacity." [ROD Part 2: Decision Summary at Pg. 117]. However, EPA's administrative record does not support its assertion that soil and sediment in this area and elsewhere at the Site constitutes a RCRA-regulated hazardous waste and/or "principal threat waste." Nor does the record support EPA's assertion that a RCRA cap is the only remedial alternative for Source Area Soils that would comply with statutory cleanup requirements under CERCLA §121.⁵

⁵ Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires that on-site remedial actions attain or waive Federal environmental Applicable and Relevant or Appropriate Requirements (ARARs), or more stringent State environmental ARARs, upon completion of the remedial action. If a RCRA hazardous waste is present, RCRA disposal and closure requirements may apply.

3.1.1.1 Regulatory Classification of Soils and Sediment

EPA's administrative record does not support its determination that regulatory requirements under RCRA apply to all dioxin-containing soil and sediment at the Site. This determination led the Agency to select an unnecessarily costly remedy with unduly rigorous remediation and construction requirements that are at odds with the National Contingency Plan (NCP),⁶ applicable EPA guidance, and EPA's regulatory determinations during previous response actions conducted at the Site.

In issuing the ROD, EPA determined that all dioxin-containing environmental media at the Site is a "hazardous waste" regulated under RCRA, based on the assumption that all dioxin-containing media at the Site included dioxin which originated from Metro-Atlantic's former hexachlorophene (HCP) manufacturing operation.⁷ EPA made that assumption even though it could not trace the presence of dioxin in the media to a release of waste from Metro-Atlantic's HCP manufacturing process. [ROD Part 3: Responsiveness Summary at Pg. 36]. EPA sidestepped the inability to identify a source by stating that a "good faith" effort is sufficient for identifying the listed waste. The

⁶ The NCP requires EPA to develop a fully informed conceptual site model consistent with the administrative record, and also outlines nine criteria that EPA must address in evaluating whether remedial alternatives meet the requirements of CERCLA Section 121.

⁷ RCRA regulates certain wastes from common manufacturing and industrial processes, such as solvents that have been used in cleaning or degreasing operations. RCRA-regulated wastes include wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives. This listing includes wastes, classified as "F020," from the production of hexachlorophene, unless such production utilized highly purified 2,4,5-trichlorophenol.) 40 CFR § 261.31.

administrative record does not support EPA's assumption that dioxins found in Site samples came from Metro-Atlantic's former HCP manufacturing operation. EPA's presumption of a connection between the HCP manufacturing operation and the presence of dioxin in site soil and sediment is erroneously based on depositions of and the recollection of personnel associated with Metro-Atlantic's main plant, and not on the recollections of individuals directly associated with the HCP plant. [ROD Part 3: Responsiveness Summary at Pg. 35]. It is not based on observed features or documented releases at the HCP operation.

In addition to the foregoing, EPA incorrectly concludes that environmental media (soil) at the Site are a "waste." The selected remedy for this area, consisting in large part of the construction of a "RCRA-compliant" cap, is predicated on the assumption that the soil in this Area is "waste" and is therefore subject to RCRA capping requirements. [ROD Part 3: Responsiveness Summary at Pg. 72]. However, under EPA's own guidance documents, these materials do not constitute a "waste" for regulatory purposes, and RCRA does not apply to Site environmental media that is remediated within the "area of contamination," as EPA proposes to do with respect to "Source Area Soil." [Management of Hazardous Waste Under RCRA, EPA 530-F-98-026 page 5,]

3.1.1.2 Principal Threat Waste

EPA also has sought to impart its application of RCRA regulatory requirements to "Source Area Soil" on the grounds that it contains "Principal Threat Waste" (PTW) as defined in the NCP, CERCLA's implementing regulations. [Interim Final Feasibility Study at Section 2.4.5]. The administrative record does not support EPA's determination

regarding the presence of PTW in this Area.

EPA generally considers PTW to include:

1. Waste contained in drums, lagoons or tanks, containing contaminants of concern.
2. Mobile source material including surface soil or subsurface soil containing high concentrations of contamination that are (or potentially are) mobile due to surface runoff, or sub-surface transport.
3. Highly-toxic source material such as buried drummed non-liquid waste, buried tanks containing non-liquid wastes, or soil containing significant concentrations of highly toxic materials. [ROD Part 3: Responsiveness Summary at Pg. 76].

EPA distinguishes PTW from low-level threat wastes, which are those source materials that generally can be reliably contained and that would present only a low risk in the event of a release. Low-level threats include source materials that exhibit low toxicity and low mobility in the environment, or are near health-based levels. [Guide to Principal Threat and Low Level Waste, EPA 1991]. Wastes generally considered to be low-level threat wastes include non-mobile contaminated source material of low to moderate toxicity, surface soil containing contaminants that are relatively immobile in air or groundwater, low leachability contaminants such as low molecular weight compounds, or low toxicity source material. [Interim Final Feasibility Study at Section 2.4.5]. EPA's administrative record does not support its conclusion that contaminants at the levels present in Source Area Soils are PTW.

The significance of this distinction is that, under the NCP, EPA employs treatment technologies to address PTW at a site, when practicable, whereas it utilizes engineering controls to address waste that poses a relatively low long-term threat or if treatment is impracticable. Under EPA guidance, the presumption and expectation is that source materials can be safely contained, and that waste treatment will not be appropriate or necessary to protect human health and the environment. [A Guide to Principal Threat and Low-Level Threat Wastes, EPA, 1991]. Where PTW is highly mobile and highly toxic, excavation and removal is appropriate. Despite the fact that EPA designated all of the soil and sediment as PTW the ROD does not require that treatment technology be employed to address the contaminated soil and sediment. In fact, the ROD requires treatment technologies be employed to address only a small percentage of the contaminated soil and sediment. Therefore as a practical matter the PTW designation has not impact on the alternatives to address contaminated soil and sediment.

EPA identified an area within the Source Area Soil Action Area under and south of the southern-most parking lot for the Centredale Manor Apartments as containing magnetic anomalies. Although EPA defines this area in the Remedial Investigation (RI) Report simply as one which contains magnetic anomalies, in the FS Report EPA classifies this area as PTW.⁸

⁸ The "Remedial Investigation" (RI) is a process undertaken by the lead agency to determine the nature and extent of the problem presented by the contaminant release. The RI emphasizes data collection and site characterization, and is generally performed concurrently and in an interactive fashion with the Feasibility

EPA's administrative record does not support its classification of this material as PTW. The geophysical surveys performed at the Site that resulted in the identification of metallic anomalies were simply a preliminary investigation tool to locate possible below ground surface anomalies, including buried drums. [Interim Final Feasibility Study at Section 2-2 AP]. EPA did not conduct any follow-up investigation that led to the identification of drums or hazardous substances that qualify as PTW. The presence of these anomalies alone does not support the conclusion that the material is PTW. As the administrative record demonstrates, the subsurface investigations completed to date do not show that the magnetic anomalies are buried, intact drums containing hazardous material; rather, they suggest the presence of relatively undifferentiated metallic debris. [Interim Final Feasibility Study at Section 2-2 AP]. The presence of magnetic anomalies, in the absence of additional information indicating the presence of intact drums or containers, does not support EPA's determination that the material in this area should be considered PTW. EPA's selected remedy for this area is based on unsubstantiated conclusions regarding the presence of PTW [ROD Part 3: Responsiveness Summary at pg. 74.].

Study (FS). The RI includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives in the FS.

The FS is a study undertaken by the lead agency to develop and evaluate options for remedial action. The FS emphasizes data analysis and is generally performed concurrently and in an interactive fashion with the RI, using data gathered during the RI. The RI data are used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives.

3.1.1.3 Impacts of EPA PTW and RCRA Determination

EPA's application of excavation / off-site disposal requirements and RCRA closure requirements to this aspect of the remedy has significant cost ramifications. EPA's present worth cost estimate for the Source Area Soil remedy is \$21.7 million, much of which stems from EPA's decision to require a RCRA cap over most of the area. In the absence of EPA's regulatory determination, an equally protective and far less costly alternative remedy would have been the consolidation of TSCA waste with the material containing metallic debris and the placement of this material beneath a TSCA cap, likely south of the Centredale Manor building. The estimated cost for this remedial alternative was significantly lower, \$5 million [Emhart comments page 70], but the alternative was not accepted. [ROD Responsiveness Summary, Page 78]. Moreover, this alternative was far less disruptive than the remedial alternative selected in the ROD. The implementation of this remedial alternative in the Source Area Soil Action Area would ensure that the ground surfaces remain intact, thereby preventing direct contact with the underlying contaminated soils. This remedial alternative would be equally protective of human health and the environment, but would be far less costly to implement and maintain than EPA's selected remedy.

3.1.1.4 Technical Feasibility of EPA's Selected Remedy.

In addition to the foregoing, there are numerous problems, challenges, issues, and concerns with regard to the technical practicability, feasibility, and implementability of the selected remedy for this area. In this respect as well, the administrative record supports the conclusion that maintenance of the existing caps (along with the

consolidation and capping described above) is the more appropriate remedial alternative for Source Area Soils.

The following is a discussion of some specific technical and logistical problems identified that support the conclusion that EPA's selected remedy for this area is unnecessarily cumbersome, impracticable, and infeasible to implement. The attached figure (Figure 2) is provided for ease of reference.

- Apartment Residents Would Require Relocation.

The temporary relocation of residents from the Brook Village and Centredale Manor apartments would be necessary to implement the selected remedy for Source Area Soils. Such relocation would be extremely difficult given the limitations of the people residing in these apartments. Under the selected remedy, existing ground surfaces would need to be removed, and impacted soils and sediments would be exposed during implementation of the remedy, creating a potentially significant risk of public exposure. In light of that risk, access to the apartment buildings would need to be restricted. Although EPA contends that necessary precautions could be implemented by "phasing" the work, and that continuous access to the buildings could be maintained, implementation of the work would require that, on multiple occasions, access to buildings be restricted. These restrictions would put the occupants at risk due to, among other reasons, the inability of emergency service providers to respond properly to emergency 9-1-1 calls. Centredale Manor and the adjacent Brook Village both provide subsidized housing for a primarily elderly population. This population would likely be more susceptible to hazards associated with construction and would likely find such significant construction work

more disruptive given their limited mobility and their reliance on other services (e.g., taxi, medical assistance). Given the extensive time period estimated by EPA for completion of the work (35 weeks, or 8 months), the record does not support EPA's contention that the residents would be able to remain in their apartment buildings.

- Cap Grades Would Impede Access to the Centredale Manor Apartment Building.

Following the construction of the prescribed RCRA cap, the new grades in at least three areas around the perimeter of the Centredale Manor apartment building would be higher than the elevation of the first floor, including one of the main entrances to the apartment building. This circumstance would cause significant drainage issues and would necessitate costly structural refurbishment to provide access to the building. EPA's cross section of the proposed cap at the building is depicted on Figure 1 attached.

- Significant Grade Problems at Smith Street Entrance.

The prescribed RCRA cap would create significant grade problems at the access road to the Site from Smith Street, as the grade would be two feet higher than the public roadway. Addressing this challenge would require movement of a significant volume of soil from this area to another area of the Site. Moving soil from one area of the site to another area of the site is contrary to EPA's proposed phased approach, which is intended to limit exposure during construction.

- Compensatory Flood Storage

There is no provision in the ROD for the establishment of compensatory flood storage in connection with the construction of the prescribed multi-layer RCRA cap. EPA failed to

provide a solution for the displacement of flood waters, other than to state that the need for compensatory flood storage would be evaluated in the future and that there was a presumption that adequate compensatory flood storage would be created downstream as a result of sediment remediation [Record of Decision, pg 14]. EPA should have considered the implications of its selected remedy on displaced flood waters as significant flood storage capacity currently present at the Site would be lost due to the construction of the RCRA cap and would need to be addressed.

- Loss of Vegetation

A total of approximately 34 trees would have to be removed to install the prescribed RCRA cap, and could not be replaced in the capped areas without significant effort and cap modification. The loss of vegetation at the Site would diminish the ability to manage storm water runoff, as well as impair the aesthetics of the area for tenants and visitors of the Site. Other appurtenances, such as the gazebo adjacent to the Brook Village complex, would also have to be removed and presumably replaced to construct the RCRA cap.

- Insufficient Cross Slopes for Drainage

The construction of the RCRA cap would create drainage issues at multiple locations at the Site. For example, a topographic low-point would be created on the north and east sides of the Brook Village complex, creating storm water drainage problems. Also, installation of drainage structures would be necessary to allow for storm water runoff. Placement of these structures beneath the cap would make future maintenance or repairs difficult without disrupting the cap or creating additional clean corridors.

Further, EPA underestimates the complexity of implementing the cap construction in a phased manner while also managing storm water. Proper management will result in costly storm water management while construction proceeds, as dewatering and surface water removal will be required.

- Tailrace Area Drainage Structures

Two storm sewer lines discharge into the east side of the former tailrace, and the elevations of the outfalls are significantly lower than the grade in the tail race would be following cap installation. There are also two storm water outfalls on the east side of the Centredale Manor complex leading to the former tailrace that would require complete replacement. In addition, the completion of the cap would require significant filling and installation of drainage structures at the north end of the tailrace area to prevent ponding of storm water. To assure proper drainage significant excavation of soils along the tailrace would be necessary and/or the drainage structures would have to be raised.

In addition, the tailrace system appears to receive and redirect groundwater at least on a seasonal basis. Groundwater flows into the tail race and then flows, as surface water, into the Allendale Pond. EPA has not considered the implications of placing an impermeable liner in the tailrace, as groundwater flow patterns will change because the liner will prevent discharge to the tail race.

- Establishment of a Utility Clean Corridor

The construction of a utility clean corridor would require provision of alternative utility

service during the period of construction, as well as provision of alternative access to and from the Site during this period. In addition, utility service to both apartment buildings would be significantly disrupted during construction. Under EPA's plan, it does not appear feasible to maintain uninterrupted utility services during the construction of a clean utility corridor and installation of replacement utilities. Further, during installation of the utility corridor, there would be a significant concern regarding emergency access for residents, as discussed above. Consequently, it would not be feasible to allow the residents to inhabit the buildings during the remedial action.

In addition, the construction of a clean utility corridor would require excavation to depth across the Site. In areas where the clean corridor excavation did not extend through the contaminated material the corridor would have to be further deepened to allow for the construction of a drainage system beneath the utilities. This additional construction activity is necessary so that the clean corridor, which would be lined with an impermeable liner, could properly drain any precipitation or runoff that enters the subsurface.

EPA did not consider the costs associated with addressing the implementation problems described above, which could not be cured without a significant additional expenditure of funds. For example, changes in site topography resulting from construction of the RCRA cap would require significant modification of drainage features, and would likely also require elevation of the topography in the area of the Centredale Manor complex or excavation around the building. Further, regardless of cost, the continued occupancy of both apartment buildings could not be accommodated practically during the construction

period.

3.1.2 Allendale and Lyman Mill Pond Sediments

EPA's selected remedy for Allendale and Lyman Mill Pond Sediments is described in the ROD, as follows:

Contaminated sediment above cleanup levels would be removed using excavation. Prior to excavation, the pond water elevations will be lowered so that the exposed sediment can be excavated using conventional earthwork equipment. The water level in Allendale Pond will be lowered by opening the gates at the Allendale Dam and letting the water drain. In order to minimize the amount of suspended sediment transported downstream, the gates will be lowered incrementally and the water will be discharged at a controlled rate. In addition, a turbidity barrier will be installed upstream from the dam gate structure to reduce the potential for migration of suspended sediment downstream from the gate structure. The water level for Lyman Mill Pond could be incrementally lowered by pumping around the dam or by repairing the gates at the dam, which are currently inoperative. The actual method used will be determined during design. Excavated sediment would be placed into an upland CDF, with an estimated 10 percent (concentrations above the LDR alternative treatment standards) shipped off site for disposal and/or treatment. The actual volume will be determined based upon sampling to insure compliance with the LDRs. The production rate for excavation, dewatering and

transport of pond sediment will be optimized during design. The optimized timeframe will consider factors such as the sequence of construction, limitation of space for dewatering equipment and sediment stockpiles, and limits on truck traffic. [ROD Part 2: Decision Summary at pg. 157].

For the reasons set forth below, the administrative record does not support EPA's selected remedy for this area of the site.

3.1.2.1 Time Required for Implementation of Selected Remedy is Underestimated

As noted in the ROD Part 2: Decision Summary at pg. 159, the sequence of activities associated with the remedy implementation for this area is:

1. Clear temporary work areas and build access ramps to the ponds;
2. Construct CDF disposal facility and water treatment system prior to sediment removal;
3. Construct sediment dewatering area, install dewatering equipment, water treatment equipment, and truck loading and decontamination facilities prior to excavation;
4. Drain the ponds one at a time beginning with Allendale Pond, excavate sediment from the ponds in an upstream to downstream direction, dewater using mechanical means and move excavated material into the upland CDF or transport off site for disposal based on results of designation sampling;
5. Operate the upland CDF water treatment system during excavation;
6. Place a cap over the upland CDF;

7. Evaluate sediment confirmation samples and determine need for a thin-layer of soil cover; install the soil cover if necessary; and
8. Remove the temporary vessel launch ramps and restore the vegetation in the temporary work areas.

The EPA has underestimated the time required for implementation of this alternative. The time required to complete Task 2 appears to be significantly underestimated, given the local opposition to construction of the CDFs reflected in the administrative record. [ROD Part 3: Responsiveness Summary at pg. 21]. The time required for Task 7 is also underestimated due to the time required for analysis, evaluation of laboratory results to assess the design and placement of a thin-layer cover or additional excavation followed by collection and analysis of additional confirmatory samples, and evaluation of this new information as described in the ROD [ROD at pg. 161]. Based on historical precedence, the time lapse between when samples are collected and when the results are available for decision-making may be as long as three months and this waiting period would occur multiple times if additional excavation and confirmatory sampling were necessary. By necessity, during this period, the area being excavated would remain exposed to the environment and dewatering activities would need to occur.

3.1.2.2 Sampling and Decision-Making Time Frames

Assuming that the samples were obtained the day of excavation and were submitted for laboratory analysis that same day, the earliest that the sample results would be known would be approximately three weeks later. The results also would require validation and evaluation, which could take approximately an additional three weeks, unless expedited.

EPA assumed that, in the interim, other areas of sediment could be excavated. However, there would be limitations on the areas that could be excavated during this minimum six-week time period because the work would have to be conducted in an upstream to downstream manner. Thus, it is likely that remediation activities would be delayed due to the timing of receipt of the laboratory analytical results and their validation and/or evaluation. This approach is not practicable or implementable during a construction project involving heavy machinery working in a river and pond. Also, during this time, the excavated areas would be subject to impacts from precipitation events and the release of impounded water from upstream reservoirs, making it very problematic to manage water within the remediation cells.

3.1.2.3 Sediment Dewatering Conclusions and Ramifications

EPA's conclusions regarding the efficiency of sediment dewatering during implementation of the remedy in this area are not supported by the administrative record, and the implications of failing to achieve EPA's optimistic dewatering projections are significant. EPA assumed that sediment dewatering and associated treatment of excavated sediment would result in a 37 percent reduction in sediment volume via mechanical dewatering. [ROD Part 3: Decision Summary at pg. 160]. However, the administrative record lacks site-specific support for this optimistic projection as the range of dewatering can vary significantly. [see for example Assessment and Remediation of Contaminated Sediments, EPA Remediation Guidance Document, 1994]

The construction of the CDF will be significantly more challenging if the dewatering efforts are less effective than anticipated. Difficulty in dewatering would both

complicate the handling of the sediment, and alter the characteristics and properties of the material to be placed in the CDF(s). Further, the volume of sediment to be disposed would be highly variable depending upon the effectiveness of the dewatering efforts. If the dewatering were less effective than anticipated, the volume of material to be managed would increase. The volume of sediment that could be placed in the CDF(s) has yet to be determined because the location of the CDF(s) has not been identified, designed or permitted. Any sediment removed in excess capacity of the CDF(s) would have to be disposed off-site. [ROD Part 3: Decision Summary at pg. 161].

3.1.2.4 Remedial Alternatives Evaluation

In its analysis of remedial alternatives for this area, EPA failed to give proper weight to alternatives that would reduce uncertainties in cost and implementability. EPA could have reduced this uncertainty, while significantly reducing the volume of contaminated soils and sediment requiring removal, by selecting for this area a remedial alternative that incorporates as a primary component the in-situ capping of impacted sediment, such as “Partial Excavation, Isolation Capping and Disposal and/or Treatment” [Interim Final Feasibility Study at pg. 5-20] with a predetermined volume of sediment removal and placement in a nearshore CDF. The administrative record is clear that the in-situ remedial alternatives proposed in the FS for this action area are protective of human health and the environment, cost-effective, and feasible to implement. [Interim Final Feasibility Study at Pg. 4-25]. In addition, the selection of an in-situ remedy would have fulfilled the EPA National Remedy Review Board’s (NRRB) recommendations that EPA staff give additional consideration to the merits of remedial alternatives that include both

excavation and capping.⁹

Instead, EPA selected a remedy requiring full excavation with an upland CDF disposal option. Although EPA treats Allendale Reach Floodplain Soil as a separate action area, the selected remedy for this area is subject to the same concerns and limitations as the alternative selected by EPA for the Allendale and Lyman Mill Pond Sediment. Upon full consideration, EPA should have selected the remedial alternative in which the excavated sediment is placed in a near-shore CDF or beneath isolation caps within the pond footprints, alternatives that are implementable, cost-effective, and protective of human health and the environment, as required by the NCP.

Further, the selection of this preferred remedial alternative would have reduced cleanup uncertainty, as EPA acknowledged. [ROD Part 3: Responsiveness Summary at pg. 8]. Based on the public comments received by EPA, including opposition from the Town of Johnston, there is significant uncertainty reflected in the administrative record regarding whether EPA's selected remedy for this area will satisfy the "public acceptance" criterion under the NCP. [December 29, 2011 Letter from Mayor of the Town of Johnston, RI]. The administrative record reflects significant concerns that arose during the public comment period regarding the possible locations for the upland CDF first proposed by

⁹ EPA created the National Remedy Review Board (NRRB) in January 1996 as part of a comprehensive package of reforms designed to make the Superfund program faster, fairer, and more efficient. The NRRB understands both the EPA regional and headquarters perspectives in the remedy selection process. It reviews proposed Superfund cleanup decisions that meet cost-based review criteria to assure they are consistent with Superfund law, regulations, and guidance.

EPA. In response, EPA expanded the area where an upland CDF could be located to beyond what is in close proximity to the Site, including locations outside the Town of Johnston [ROD Part 3: Responsiveness Summary at Pg. 21], but the administrative record makes clear that it remains very much an open question whether EPA will ever be able to secure such a location.

3.1.2.5 Inability to Effectively Evaluate Costs of Remedy

The significant uncertainties regarding the scope, implementability, and timing of the selected remedy for this area as reflected in the administrative record make EPA's evaluation of the costs associated with its selected remedy difficult. These uncertainties are most pronounced with respect to the lateral and vertical extent of the contamination that will need to be addressed, as well as the siting and construction costs associated with the upland CDF.

EPA acknowledges in the administrative record that additional investigation would be necessary to more accurately delineate the depth of contamination, but states that, based on the information collected to date, the average cleanup depth would be 1.9 feet at Allendale Pond and 2.4 feet at Lyman Mill Pond. [ROD Part 3: Responsiveness Summary at pg. 47]. Based on these estimates, the total volume of sediment removal would be 155,000 cubic yards, which would require placement of 97,700 cubic yards of sediment in CDFs after dewatering. [ROD Part 3: Responsiveness Summary at pg. 55]. Excavation work would have to be completed largely with earth moving equipment (i.e., large excavators, bulldozers, loaders, etc.). EPA's volume estimates do not take into consideration the practicability of completing the excavation of sediment with this type of

equipment to the specified precision of a tenth of a foot. Excavation of soft sediments with heavy earthmoving equipment will cause significant disturbance of the sediment strata during excavation thus resulting in excavation beyond the target depth. If the sediment is over-excavated by as little as 0.5 feet (six inches), the volume of material excavated could increase by 20 to 25 percent. Because the upland CDF(s) proposed by EPA in the ROD likely could not accommodate this additional volume of sediment, this additional sediment would require off-site disposal at a cost of over \$30 million.¹⁰

As noted above, based on public opposition, construction of the CDF(s) at the locations proposed by EPA appears unlikely. In response, EPA has indicated that suitable locations for CDF(s) may be identified outside the Town of Johnston and may include “brownfield” properties. [ROD Part 3: Responsiveness Summary at Pg. 21]. Whereas identifying alternative CDF locations in the future may present an opportunity for EPA to site potentially larger CDF(s) with sufficient capacity to accept all of the sediment excavated, EPA’s failure to identify such a location at the time of ROD issuance made it impossible for the Agency to accurately estimate the remedy costs, as required by the NCP. It is not possible to accurately predict the costs associated with acquiring, permitting, designing and constructing a CDF until a location has been identified. Nor is it possible to estimate the overall impact and cost of having to transport the sediment over

¹⁰ Estimate presumes 25 percent increase in volume of 97,700 cubic yards of soil (24,425 cy) equals approximately 34,195 tons of soil assuming an average excavation depth of two feet. Off-site disposal costs are estimated at \$880 per ton. Total estimated cost \$30,091,600.

a longer distance to a CDF. In the absence of an identified and approved CDF location, the ROD requires the offsite disposal of sediment [ROD Part 3: Responsiveness Summary at pg. 22], for which the estimated cost of transportation and disposal is approximately \$120 million.¹¹

Given the uncertainties regarding the location, cost of acquisition, and regulatory implications of siting new CDF(s) reflected in the administrative record, the record does not support the selection by EPA of the upland CDF remedy. Rather, as discussed, the administrative record better supports the selection of an equally effective and protective remedial option for this area in which the excavated sediment is placed in a near shore CDF or beneath isolation caps within the pond footprint. [Interim Final Feasibility Study at pg. 6-14].

3.1.3 Oxbow Area

In the ROD, EPA identified “Alternative 3A” as the selected remedy for Lyman Mill Stream Sediment and Floodplain Soil, also referred to as the “Oxbow Area.” This alternative “includes excavation and removal of contaminated sediment and floodplain soil from targeted areas within the ecological habitat and recreational-use cleanup areas and/or placement of a thin-layer cover over the other areas where soil/sediment remains above cleanup levels... [f]low control structures and situated baffles will be designed to

¹¹ Estimate presumes 97,700 cubic yards of sediment equals 136,780 tons of sediment disposed at a rate of \$880 per ton equals \$120,366,400. [ROD Part 2: Decision Summary at pg. 183].

increase the amount of the sediment load that is deposited into the Oxbow while minimizing the likelihood that floodwater flows would retain sufficient energy to erode surface soils". [ROD Part 2: Decision Summary at pg. 171].

For the reasons discussed below, there is inadequate support in the administrative record for EPA's selected remedy for the Oxbow Area.

3.1.3.1 Deposition Rate Uncertainty Creates a Lack of Certainty Concerning Volume of Sediment Excavation

When selecting the remedy for the Oxbow Area, EPA assumed that the sediment deposition rate in that area is 20 percent of the average deposition rate for Allendale and Lyman Mill Pond, or 0.048 centimeters per year (cm/y). No actual studies were conducted nor was an effort made to more accurately determine the deposition rate, despite Emhart's comments questioning the validity of EPA's assumption in that regard.

In the ROD, EPA stated that the amount of sediment to be excavated from the Oxbow Area could vary depending on the actual rate of sediment deposition; thus, it could increase the excavation footprint beyond the area identified in the Proposed Plan. [ROD Part 2: Decision Summary at Pg. 172]. If deposition rates are lower than anticipated then additional sediment excavation or the placement of a thin-layer cap may be necessary. This increase in the volume of excavated sediment would affect both the implementability and cost of the selected remedy because the volume of soil and/or sediment that will fit in the CDF(s) is fixed once the CDF(s) have been designed. Thus, any increase in the volume of sediment to be excavated would effectively increase the amount of material that would have to be shipped off-site. The disposal options for the

Oxbow Area raise the same problems as do the disposal options for the excavated sediment from Allendale and Lyman Mill Pond Sediments, as discussed above, including concerns regarding both the ability to site the CDFs and the appropriate size of the CDFs.

Moreover, the ability to identify an off-site location that could accept any excess volumes of excavated sediments impacted with dioxin already was uncertain before EPA considered expanding the excavation area within the Oxbow Area. [e.g., ROD Responsiveness Summary, pg 42]. The additional sediment requiring off-site disposal could be shipped to only a limited number of disposal facilities, some located as far away as Texas. Shipping larger volumes of material great distances would itself negatively affect the environment, causing the release of even larger amounts of carbon dioxide and other greenhouse gases into the atmosphere. This occurrence would be contrary to EPA's green remediation guidelines. [Green and Sustainable Remediation Guidance Document – EPA Region 1].

3.1.3.2 Uncertainties Concerning Floodplain Soil Volume

The ROD states that “[t]he actual depth of excavation will extend deeper within the vadose zone to meet Remedial Action Objectives (RAOs) as necessary, and will be determined during design based on sampling and analysis of deeper soil samples.” [ROD Part 2: Decision Summary at pg. 166]. However, because the area was inadequately characterized by EPA, insufficient information exists to accurately calculate the actual depth to which excavation of the flood plain soils would need to occur; therefore, the volume of soil to be removed was not and cannot be accurately assessed. As previously discussed, because the volume of soil to be placed in the CDF is effectively fixed, the

removal of additional soil beyond that estimated by EPA would require disposal at an off-site location. Also, as previously discussed, reliance on off-site disposal of excavated material has uncertain cost implications which could vary significantly and which EPA has not fully considered or evaluated, contrary to the NCP.

3.1.3.3 Reporting Limits of Certain Samples Exceed EPA's RAOs

The Remedial Action Objectives (RAOs) for soils impacted with TCDD for this Site are 17 ppt, and soil with concentrations of TCDD above this threshold must be excavated.¹² [ROD Table L-2 and L-12] A number of soil samples collected in the southern portion of the Oxbow Area, SS-99-01 through SS-99-16, had TCDD reporting limits 20 times higher than the RAOs.

The lowest reportable concentration for these samples was 332 parts per trillion (ppt), meaning that the laboratory could not distinguish anything below this concentration. Thus, the sampling data cannot be used to accurately delineate soils with TCDD at concentrations above the RAOs. Instead, there is only an estimate of the volume of soil that would have to be excavated. A lower detection limit would have allowed for a more accurate assessment, but because EPA utilized a laboratory detection limit for samples in this action area that was not sufficiently low, it was unable to accurately predict the volume of sediment to be removed or the costs associated with that removal.

¹² 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) is a polychlorinated dibenzo-*p*-dioxin.

Given the uncertainties regarding (1) the volume of soil and sediment required to be excavated; (2) the availability and cost of acquiring an appropriately-sized parcel of land for upland CDF(s); and (3) the regulatory obstacles to siting new upland CDFs, an alternative remedial option for this area -- the placement of the excavated sediment in Allendale and Lyman Mill Ponds in near shore CDFs or beneath isolation caps within the pond footprints -- appears more prudent.

3.1.4 Source Area Groundwater

3.1.4.1 Removal Action (2009/2010)

In August 2009, Emhart entered into an Administrative Settlement Agreement and Order on Consent (AOC) with EPA (CERCLA Docket No. 01-2009-0086) to perform a removal action, wherein Emhart agreed to excavate and dispose off-site delineated dioxin-contaminated soils within the Source Area Groundwater and Source Area Soil Action Areas, and to install an impermeable cap, at a cost of approximately \$3 million. EPA issued a Notice of Completion for this response action on July 27, 2010.

The AOC reflected EPA's expectation that no further cleanup involving the Groundwater Action Area would be necessary following completion of the removal action: "EPA believes that, subject to post-implementation monitoring, the removal action will mitigate a potential risk to public health, welfare or the environment posed by this area of the Site." [August 2009 AOC, Section VI, Paragraph 3; EPA's September 7, 2010 Press Release entitled "Short-Term Clean-up Completed at Centredale Manor Restoration Project in N. Providence"].

Assuming, as EPA staff posited as the basis for requiring the removal action, that dioxin was migrating to the River in Source Area Groundwater, the removal action adequately mitigated the alleged risks associated with this potential migration pathway, such that no further remediation was required in the ROD. [ROD Part 2: Decision Summary at pg. 18, “[t]he most recent excavations and capping ... in 2009 and 2010 are expected to minimize dioxin entering the River via surface runoff, erosion of flood plain soils, and leaching”]. This conclusion was confirmed by the results of groundwater samples collected on February 2, 2010, from the two monitoring wells installed as part of the removal action to verify its efficacy. Groundwater sampling results for 2,3,7,8-TCDD from these two monitoring wells were 1.7 pg/L and 6.7 pg/L, both of which are lower than EPA’s groundwater cleanup goal of 30 pg/L. [Interim Final Feasibility Study Addendum, Table 3-7]. As acknowledged by EPA, the removal action effectively mitigated any risk that may have been posed under the Agency’s theory of groundwater transport of dioxin to surface water.¹³

3.1.4.2 Groundwater Clean-Up Standards

In its pre-ROD decision documents, EPA identified the State of Rhode Island’s groundwater protection standards as Site cleanup standards. [Interim Final Feasibility

¹³ See for example EPA description of activities at

http://yosemite.epa.gov/R1/npl_pad.ns

f/31c4fec03a0762d285256bb80076489c/bbe0100a535e8840852576e90053b186!OpenDocument

Study at pg. 3-2]. The Rhode Island Department of Management (RIDEM) determined that the groundwater beneath and surrounding the Site is impaired and not suitable for potable (drinking) purposes. Thus, RIDEM classified groundwater beneath the Site as a non-drinking water "GB" aquifer. Moreover, RIDEM classified all groundwater downgradient of the Site as a "GB" aquifer.¹⁴

Notwithstanding the foregoing, in its comments submitted to EPA, the NRRB disputed the Region's application of RIDEM's groundwater classification scheme, instead advocating for the use of federal drinking water standards as Site ARARs. The NRRB asserted that view because RIDEM had not submitted its groundwater protection plan for EPA's approval. [ROD Part 3: Responsiveness Summary at pg. 87].

In responding to the NRRB's comments, EPA described the Site as clearly not suitable for drinking water purposes, now or in the future.¹⁵ Nonetheless, in the FS Report, EPA

¹⁴ The Rhode Island Department of Environmental Management (DEM) "Groundwater Quality Rules" classify all of the state's groundwater resources and establish groundwater quality standards for each class. The four classes are designated GAA, GA, GB, and GC in accordance with the RI Groundwater Protection Act of 1985 (RI General Laws 46-13.1). Groundwater classified GAA and GA is to be protected to maintain drinking water quality, whereas groundwater classified GB and GC is known or presumed to be unsuitable for drinking water use without treatment. Greater than 90% of the state's groundwater resources are classified as suitable for drinking water use (i.e., class GAA and GA). (from State of Rhode Island website).

¹⁵ As EPA noted: (1) RIDEM has identified 18 state regulated waste sites along the River in the vicinity of the Site; (2) EPA data from wells in the Town of Johnston, and RIDEM data from the other State sites "show non-site related groundwater contamination beyond the Source Area;" (3) "Since 1992, the groundwater entirely surrounding the Centredale Manor Site has been classified as a non-drinking water (GB) aquifer by the State of Rhode Island due to the numerous non-Superfund sources located on both sides of the Woonasquatucket River (both downstream and upstream from the Source Area);" and (4) Based upon a review of extensive historic groundwater data provided by RIDEM, locations away from the Source Area are influenced by releases (including TCE and PCE) not attributable to the Site. As a result,

applied the federal drinking water standards, rather than RIDEM's groundwater classification system, as an ARAR. Instead, EPA assigned the Federal groundwater classification of Class IIB (Potential Source of Drinking Water) consistent with EPA Guidelines in states without an approved groundwater classification system. [Guidelines for Ground-Water Classification Under EPA Ground-Water Protection Strategy].

Given that groundwater under and in the vicinity of the Site is not, and never will be, a useable source of potable water owing to the long industrial history of this region, EPA's determination to apply federal standards applicable to a "potential source of drinking water" as an ARAR appears more a result of bureaucratic inertia than thoughtful application of regulation. EPA accepted state groundwater standards for other CERCLA sites, including Pine Street Canal and Pownal Tannery in Vermont and the Atlas Tack Corporation in Fairhaven, Massachusetts consistent with the Guidelines. [ROD Part 3: Responsiveness Summary at pg. 85]. The only difference is that these three sites are in states that have EPA-approved groundwater protection plans. Like the groundwater at these three Superfund sites, the groundwater beneath and surrounding the Site is impaired and not suitable for potable purposes. It was on that basis that RIDEM classified groundwater beneath and downgradient of the Site as a non-drinking water GB aquifer.

EPA's determination that there may be a potential point of human exposure beyond the

anthropogenic conditions beyond the Source Area represent background concentrations for the aquifer beyond the Source Area. [ROD Part 2: Decision Summary at Pg. 48].

boundary of the Site is not supported by the administrative record. Public drinking water is available to all properties in the vicinity of and downgradient of the Site. Rather than propose more monitoring, as it did in the ROD, EPA should have worked with RIDEM to adopt RIDEM's groundwater classification system.

3.1.4.3 Effect of EPA's Decision to Re-Classify Groundwater

Based on the successful completion by Emhart in 2010 of the Time Critical Removal Action at the Groundwater Action Area, the ROD provides that the only remaining components to be implemented for the groundwater remedy are long-term monitoring and Institutional Controls (ICs). The ICs, which are intended to prevent the exposure and use of Site groundwater, likely will be in the form of a land use restriction. The long-term monitoring detailed in the ROD [ROD Part 2: Decision Summary at pg. 155] includes the following:

Additional Monitoring Well Installation – Three additional monitoring well clusters are to be installed with screened intervals 40 and 80 feet below ground surface. The proposed locations of the new monitoring well clusters will be determined based on the remedial design for the Site.

Annual Groundwater Monitoring – Annual groundwater monitoring will include samples collected from 14 existing wells and 6 new well intervals for dioxin and other contaminants, to evaluate the continued effectiveness of the 2009/2010 groundwater response action, including whether contaminated groundwater is still leaving the Source Area.

A review of Source Area groundwater monitoring data indicates that contamination is present at concentrations exceeding the Class II B (Potential Source of Drinking Water) federal drinking water standards [Interim Final Feasibility Study at Table 2-6b]. Concentrations of perchloroethylene (PCE) above federal Maximum Contaminant Levels (MCLs)¹⁶ were detected in deeper well intervals (deep overburden and bedrock) in two areas: (i) along the western portion of the Source Area in MW14M, MW07D and MW12D, which are located south of the area excavated during the 2009–2010 removal action; and (ii) in the eastern portion of Cap Area #1 near MW02M, MW02D, MW13S, MW13D, MW13B, MW04D and MW04B.

The removal action completed in 2010 was designed and implemented to address only the shallow groundwater in the area beneath the approximately 0.13 acres on the west side of the Brook Village parking lot. It was not intended to, nor will it, address all groundwater contamination beneath the entire eight-acre Peninsula,¹⁷ which monitoring data indicate contains contaminant concentrations in excess of the federal standards applicable to a potential source of drinking water. While EPA contends that the installation of the RCRA cap in the source area will mitigate leaching of contaminants above the water table into groundwater [ROD Part 3: Responsiveness Summary at pg. 85], this cap will not restore the groundwater to the federal standards applicable to a

¹⁶ Maximum Contaminant Levels are Federal drinking water standards

¹⁷ The Peninsula is the land area extending south of Route 44 between the river (to the west) and the former tail race (to the east).

potential source of drinking water.¹⁸ Moreover, by failing to reevaluate the groundwater remedial alternatives to account for the switch in the groundwater classification from non-potable to a potential source of drinking water in the ROD, EPA has reserved until a later date its right to require a much more comprehensive groundwater remedy at the Site. This would likely occur as a result of the five year remedy reviews that show persistent non-compliance with the Federal groundwater standards.

In sum, although the ROD presently only requires long-term groundwater monitoring and institutional controls for the Groundwater Action Area, by virtue of requiring an extensive monitoring program EPA has structured the ROD such that extensive further remediation work likely will be required in the future.

As noted, the administrative record best supports a remedial alternative that recognizes the urban nature and the industrial history of the area and designates the groundwater as non-potable. Ultimately EPA's current approach likely would lead to additional and costly groundwater remediation that is unnecessary and not supported by the administrative record. Such groundwater remediation likely would consist of measures to hydraulically control and contain contaminant migration. Based on my experience, such a system would cost several million dollars to design and install, and would operate for

¹⁸ EPA opines that the construction of a RCRA cap over the source area will significantly mitigate migration of contaminants in groundwater [ROD Part 3: Responsiveness Summary at Pg. 85]. Installation of an impermeable cap will reduce migration of precipitation (i.e., rain, snow) to groundwater, thereby reducing potential leaching of contaminants. However, it will not address contaminants detected below the water table within the Source Area. Installation of a cap will not significantly reduce potential migration of contaminants in the groundwater, where the source of this contamination is below the water table.

decades. While such groundwater remediation may be “required” under EPA’s application of federal standards, it would not result in any meaningful protection of human health or the environment, given that the use of groundwater from this area for potable purposes would be prohibited by institutional controls.

3.2 Conclusion

My conclusions concerning EPA’s selected remedy for the Site are summarized below. With regard to “Source Area Soils,” EPA’s administrative record does not support the construction of a RCRA cap; rather, it demonstrates that a RCRA cap is unnecessary for the protection of public health and that construction of such a cap would unnecessarily disrupt site use and alter Site conditions with no significant benefit. It does not appear that EPA fully considered the implications of such a remedy on the affected populace and, as documented in the record, EPA’s selected remedy was based on an incorrect application of the regulatory status of the contaminated environmental media (soil).

Moreover, EPA did not correctly estimate the costs associated with the implementation issues identified in the administrative record. EPA did not include the costs resulting from the fact that construction of a cap as prescribed by EPA would fundamentally change the Brook Village and Centredale Manor properties by increasing the grade levels across the properties, thereby creating access and drainage problems. EPA appears to have disregarded findings in the record that such construction activity would be extremely disruptive over a long period of time to the sensitive population that resides at the Site. Nor did EPA address issues raised in the administrative record to demonstrate that such changes would not lead to meaningful health or environmental benefits.

With regard to the selected remedies for the management of Allendale and Lyman Mill Pond Sediment, Allendale Floodplain Soil, and Lyman Mill Stream Sediment and Floodplain Soil, if implemented, the remedy costs in these areas would be significantly higher than estimated by EPA. EPA underestimated the complexity of the sediment removal that would be required. EPA did not properly consider the additional costs that would be necessitated because the CDF(s) initially identified by the EPA as the critical element of its selected remedy for these areas were, and continue to be, opposed by the public and local officials. Significant additional costs will be incurred to pursue additional yet-to-be-identified locations for soil and sediment disposal “near” the Site. Moreover, EPA likely has underestimated the volume of sediment requiring disposal due to its unsupported and imprecise projection of the number of cubic yards to be disposed in the CDF(s). Further, the absence of a known location for disposal of soil and sediment excavated from these areas readily leads to the conclusion that a suitable location for the CDF(s) may never be identified. In that event, all of the excavated material will require disposal/incineration at an off-site facility, the cost of which would be significantly higher than the ROD estimate perhaps with a total cost in excess of approximately \$120 million.

There is inadequate support in the record for EPA’s decision to require groundwater at the Site to meet “potable” drinking water standards. The State of Rhode Island concluded that the groundwater at the Site should be classified as “non-potable,” taking into consideration the long industrial history and urban nature of the area and the availability of public water. EPA did not consider in its alternatives analysis for this area the likely eventuality that the prescribed groundwater monitoring would result in a

finding that cleanup goals based on potable water standards are not being achieved and that remediation to contain and treat groundwater is necessary.

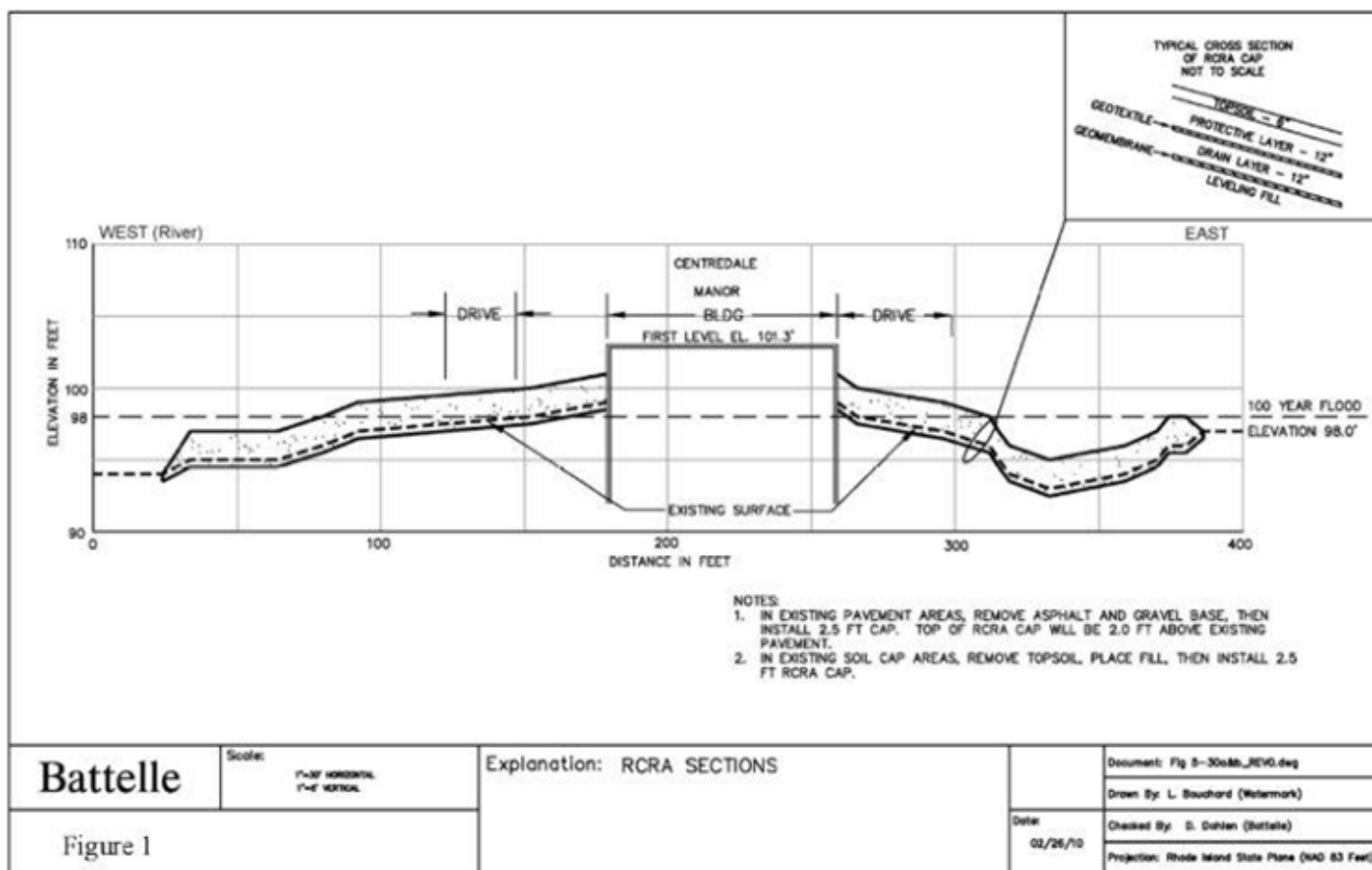
Support in the administrative record is equally lacking for EPA's determination that the construction of a RCRA cap over source area soil would result in achievement of the federal groundwater standards over time. Instead, the record better supports the conclusion that concentrations of volatile organic compounds and other contaminants likely would remain in groundwater as a result of contaminant sources that exist beneath the water table, and that construction of a RCRA cap over the source area would not significantly reduce the migration of contaminants (particularly in intermediate and deeper zones of the aquifer) because some sources of such contaminants are below the water table. Under a conservative estimate, the design, installation, and long-term operation of a groundwater remediation system to contain such contaminants in groundwater would likely cost several million dollars.

LIST OF FIGURES

Figure 1 – Battelle FS Report Figure L-2

Figure 2 – Site Plan

Record of Decision
Part 2: The Decision Summary



Record of Decision
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

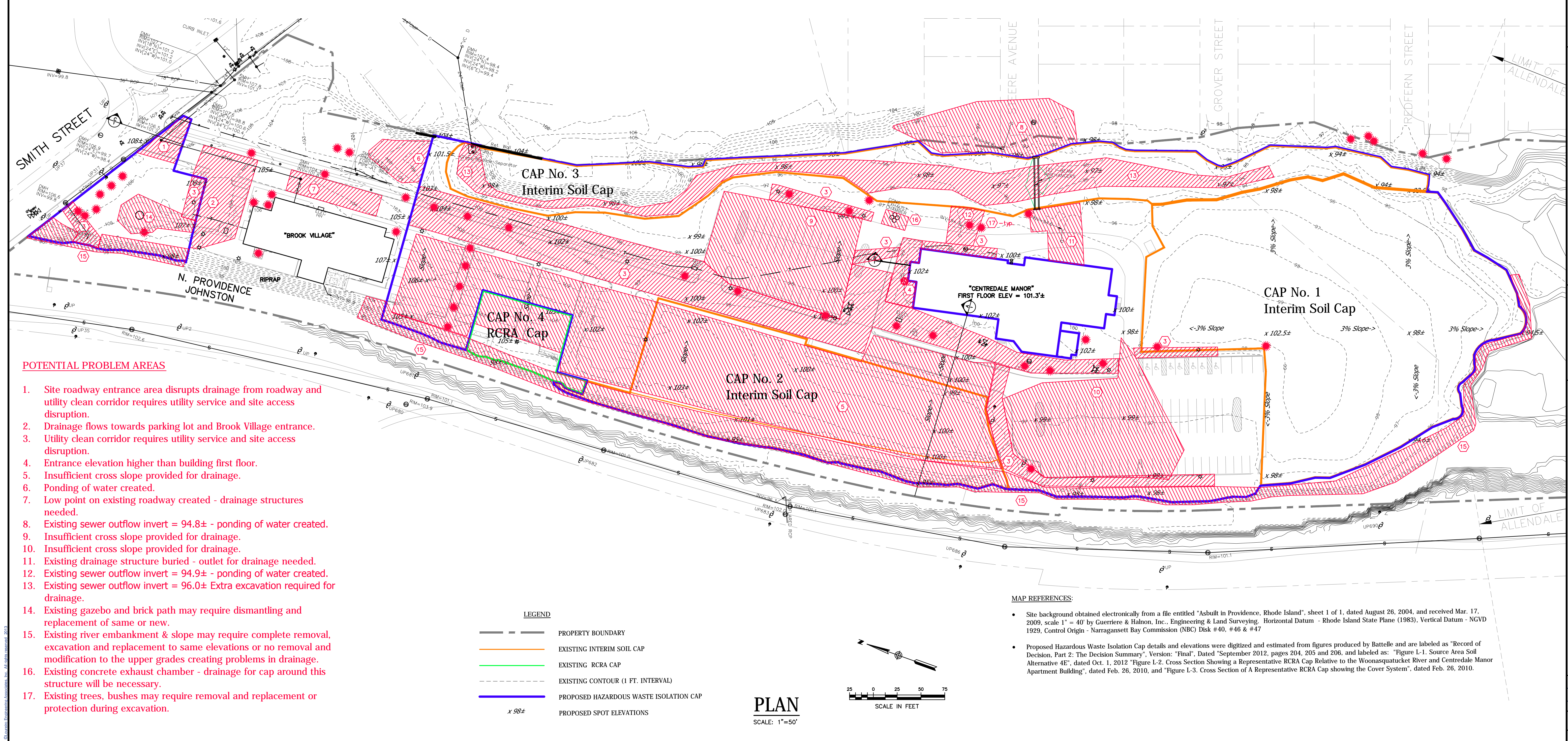
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FIGURE 1

Loureiro
Engineering • Construction • ERM • Design • Maps



 <p>Loureiro Engineering • Construction • Design • Water</p>		<p>SCALE 1" = 50'</p>		<p>1" = 50'</p>		<p>Loureiro Engineering Associates, Inc. 100 Northwest Drive • Plainville, Connecticut 06062 Phone: 860-747-5181 • Fax: 860-747-9822 An Employee Owned Company • www.Loureiro.com</p>	
		<p>07/ND5.09</p>		<p>07/ND5.09</p>		<p>07/ND5.09</p>	
<p>FIGURE 2 - SITE PLAN</p>		<p>DATE</p>		<p>DATE</p>		<p>DATE</p>	
		<p>07/15/13</p>		<p>07/15/13</p>		<p>07/15/13</p>	
<p>DRAWING</p>		<p>NO. OF SHEETS</p>		<p>NO. OF SHEETS</p>		<p>NO. OF SHEETS</p>	
<p>SHEET NO.</p>		<p>SHEET NO.</p>		<p>SHEET NO.</p>		<p>SHEET NO.</p>	
<p>DATE</p>		<p>DATE</p>		<p>DATE</p>		<p>DATE</p>	
<p>APPROVED BY</p>		<p>APPROVED BY</p>		<p>APPROVED BY</p>		<p>APPROVED BY</p>	
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<p>G.F.B.</p>		<p>G.F.B.</p>		<p>G.F.B.</p>		<p>G.F.B.</p>	
<p>07/15/13</p>		<p>07/15/13</p>		<p>07/15/13</p>		<p>07/15/13</p>	
<p>DESCRIPTION OF REVISION</p>		<p>DESCRIPTION OF REVISION</p>		<p>DESCRIPTION OF REVISION</p>		<p>DESCRIPTION OF REVISION</p>	
<p>REV.</p>		<p>REV.</p>		<p>REV.</p>		<p>REV.</p>	
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<p>APPR.</p>		<p>APPR.</p>		<p>APPR.</p>		<p>APPR.</p>	

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Exhibit 2

Trial Testimony

- The Site and selected alternatives are complicated and interconnected
- The selected alternatives have significant issues relating to implementability and how those issues affect cost
- Developed an implementation scenario to demonstrate:
 - How these technical issues arise during implementation,
 - That selected alternatives are insufficiently developed to adequately take into account these implementation issues; and
 - The extent to which they were considered in the cost and time estimates

Trial Testimony

- Prepared a 2-dimensional graphical depiction of the implementation scenario
- Obtained accurate 3-dimensional renderings for certain parts of the process to demonstrate the true nature of the issues